

AP3 Rec'd PCT/PTO 11 MAR 2006

PTO/SB/21 (09-04) MODIFIED

TRANSMITTAL FORM

Application Number: 10/534,099
 Filing Date: MAY 6, 2005
 First Named Inventor: BENOIT DE CROMBRUGGHE
 Art Unit: Unknown
 Examiner Name: Unknown

Total Number of Pages in this Submission : _____

Attorney Docket Number: UTSC:772US

ENCLOSURES (check all that apply)

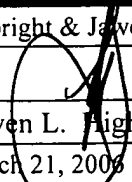
- ☐ Fee Transmittal Form
☐ Fee Attached
- ☐ Amendment/Reply
☐ After Final
☐ Affidavits/declaration(s)
- ☒ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
☐ Form PTO-1449
☐ References _____
- ☐ Certified Copy of Priority Documents
- ☒ Reply to Missing Parts/
 Incomplete Application
☒ Reply to Missing
 Parts/Requirements
☒ Declaration(s) 2
☒ Copy of Notice of Missing
 Parts/Requirements

- ☐ Drawings(s) _____
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation,
 Change of Correspondence
 Address
☐ Statement under 37 CFR §3.73(b)
☐ Designation of Patent Practitioners
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number CD(s) _____
☐ Landscape Table on CD

- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) (please identify below)
☒ Check in the amount of \$60.00
☒ Authorized to be charged to deposit account
 if check insufficient or inadvertently omitted
 Deposit account number: 50-1212/UTSC:772US
☒ Sequence Statement
☒ Paper Copy of Sequence Listing
☒ Computer Readable Form (CRF)
☒ Postcard
☒ Notification of Defective Response
☐ _____

Remarks:

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Fulbright & Jaworski L.L.P.	Customer Number	32425
Signature			
Printed Name	Steven L. Highlander	Reg. No.	37,642
Date	March 21, 2006		

EXPRESS MAIL MAILING LABEL

NUMBER EV 674811651 US

DATE OF DEPOSIT March 21, 2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

BENOIT DE CROMBRUGGHE
HARUHIKO AKIYAMA

Serial No.: 10/534,099

Filed: MAY 6, 2005

For: HA4, A NEW OBSTEOBLAST-AND
CHONDROCYTE-SPECIFIC SMALL
SECRETED PEPTIDE, COMPOSITIONS
AND MEHTODS OF USE

Group Art Unit: Unknown

Examiner: Unknown

Atty. Dkt. No.: UTSC:772US

EXPRESS MAIL MAILING LABEL	
NUMBER	EV 674811651 US
DATE OF DEPOSIT	March 21, 2006

**RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C.
371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) AND
THE NOTIFICATION OF DEFECTIVE RESPONSE**

MS PCT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

In response to the Notification of Missing Requirements under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US), dated December 22, 2005 and also the Notification of Defective Response dated January 10, 2006, there are enclosed herewith:

- (a) Two Declarations executed on behalf of BENOIT DE CROMBRUGGHE AND HARUHIKO AKIYAMA;
- (b) Statement as Required Under 37 C.F.R. § 1.825(a) and (b) and Statement as Required Under 37 C.F.R. § 1.821(g);
- (c) Computer Readable Form of Sequence Listing;
- (d) Paper Copy of Sequence Listing;

- (e) Our check in the amount of \$60.00 to cover the one month extension of time fee;
 - (f) A copy of Notification of Missing Requirements under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US) and the Notification of Defective Response; and
 - (g) A Request for Extension of Time of one month to and including March 22, 2006.
- Should such request be absent, consider this such a request and authorization to withdraw the appropriate fee under 37 C.F.R. §§ 1.16 to 1.21 as stated below.

An Assignment to BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM and a check for \$40.00 are being filed under separate cover.

If the check is inadvertently omitted, or should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to the enclosed materials, or should an overpayment be included, the Commissioner is authorized to deduct or credit the appropriate fees from or to Fulbright & Jaworski Deposit Account No.: 50-1212/UTSC:772US.

Please date stamp and return the accompanying postcard to evidence receipt of these documents.

Respectfully submitted,



Steven L. Highlander
Reg. No. 37,642
Attorney for Applicants

FULBRIGHT & JAWORSKI L.L.P.
600 Congress Avenue, Suite 2400
Austin, Texas 78701
(512) 474-5201

Date: March 21, 2006



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/534,099	Benoit De Crombrughe	TUSC:772US

INTERNATIONAL APPLICATION NO.

PCT/US03/35139

I.A. FILING DATE

PRIORITY DATE

11/04/2003

11/04/2002

32425
FULBRIGHT & JAWORSKI L.L.P.
600 CONGRESS AVE.
SUITE 2400
AUSTIN, TX 78701

CONFIRMATION NO. 2102

371 FORMALITIES LETTER



OC000000017812418

Date Mailed: 01/10/2006

NOTIFICATION OF DEFECTIVE RESPONSE

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495)

- Indication of Small Entity Status
- Priority Document
- Copy of the International Application filed on 05/06/2005
- English Translation of the IA filed on 05/16/2005
- Copy of the International Search Report filed on 05/06/2005
- Preliminary Amendments filed on 05/06/2005
- Biochemical Sequence Diskette filed on 05/16/2005
- Biochemical Sequence Listing filed on 05/16/2005
- Small Entity Statement filed on 05/06/2005
- Copy of references cited in ISR filed on 05/16/2005
- U.S. Basic National Fees filed on 05/06/2005
- Assignment filed on 05/16/2005
- Priority Documents filed on 05/06/2005

FULBRIGHT & JAWORSKI, LLP

IPT DOCKETING

Docketed ☒ Not Req'd ☐ Confirmation ☐Initials 1st DL Initials 2nd SLH

JAN 18 2006

Attorney DL/SLHDocket No. TUSC:77245

Action Req'd

Date Due

Missing Parts due 2/22/06.
Final 7/22/06.

Applicant's response filed 05/16/2005 is hereby acknowledged. The following requirements set forth in the NOTIFICATION of MISSING REQUIREMENTS mailed 12/22/2005 have not been completed.

- A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 CFR 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing." Applicant must provide a substitute computer readable form (CRF) copy of the "Sequence Listing" and a statement that the content of the sequence listing information recorded in computer readable form is identical to the written (on paper or compact disc) sequence listing and, where applicable, includes no new matter, as required by 37 CFR 1.821(e), 1.821(f), 1.821(g), 1.825(b), or 1.825(d).

Applicant is required to complete the response within a time limit of ONE MONTH from the date of this Notification or within the time remaining in the response set forth in the Notification of Missing Requirements, whichever is the longer. No extension of this time limit may be granted under 37 CFR 1.136, but the period for response set in the Notification of Missing Requirements may be extended under

37 CFR 1.136(a).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

For questions regarding compliance to 37 CFR 1.821-1.825 requirements, please contact:

- **For Rules Interpretation, call (571) 272-0951**
- **For Patent Software Program Help, call Patent EBC at 1-866-217-9197 or directly at 703-305-3028 / 703-308-6845 between the hours of 6 a.m. and 12 midnight, Monday through Friday, EST.**
- **Send e-mail correspondence for Patent Software Program Help @ ebc@uspto.gov**

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

DEBORAH D WILLIAMS

Telephone: (703) 308-9140 EXT 205

PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/534,099	PCT/US03/35139	TUSC:772US

FORM PCT/DO/EO/916 (371 Formalities Notice)

STIC Biotechnology Systems Branch

RAW SEQUENCE LISTING ERROR REPORT

mail

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/534,099
Source: PCT/10
Date Processed by STIC: 5/16/05

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, TELEPHONE: 571-272-2510; FAX: 571-273-0221

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 4.2.2 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

<http://www.uspto.gov/web/offices/pac/checker/chkrnote.htm>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebc/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. Hand Carry, Federal Express, United Parcel Service, or other delivery service (EFFECTIVE 01/14/05):
U.S. Patent and Trademark Office, Mail Stop Sequence, Customer Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

Revised 01/24/05



PCT

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:15

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

3 <110> APPLICANT: DE CROMBRUGGHE, BENOIT
 4 AKIYAMA, HARUHIKO
 6 <120> TITLE OF INVENTION: HA4, A NEW OSTEOLAST- AND CHONDROCYTE-SPECIFIC SMALL
 7 SECRETED PEPTIDE, COMPOSITIONS AND METHODS OF USE
 9 <130> FILE REFERENCE: UTSC:772US
 C--> 11 <140> CURRENT APPLICATION NUMBER: US/10/534,099
 12 <141> CURRENT FILING DATE: 2005-05-06
 14 <150> PRIOR APPLICATION NUMBER: PCT/US2003/035139
 15 <151> PRIOR FILING DATE: 2003-11-04
 17 <150> PRIOR APPLICATION NUMBER: 60/423,690
 18 <151> PRIOR FILING DATE: 2002-11-04
 21 <160> NUMBER OF SEQ ID NOS: 3
 23 <170> SOFTWARE: PatentIn Ver. 2.1
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 735
 27 <212> TYPE: DNA
 28 <213> ORGANISM: Artificial Sequence
 30 <220> FEATURE:
 31 <221> NAME/KEY: CDS
 32 <222> LOCATION: (1)..(735)
 34 <220> FEATURE:
 35 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
 36 Primer
 38 <400> SEQUENCE: 1
 39 atg cac ccc caa ggc cgc gcg gcc ccc ccg cag ctg ctg ctc ggt ctc 48
 40 Met His Pro Gln Gly Arg Ala Ala Pro Pro Gln Leu Leu Leu Gly Leu
 41 1 5 10 15
 43 ttc ctt gtg ctg ctg ctg ctt cag ttg tcc gca ccg tcc agc gcc tct 96
 44 Phe Leu Val Leu Leu Leu Leu Gln Leu Ser Ala Pro Ser Ser Ala Ser
 45 20 25 30
 47 gag aac ccc aag gtg aag caa aaa gcg ctg atc cgg cag agg gag gtg 144
 48 Glu Asn Pro Lys Val Lys Gln Lys Ala Leu Ile Arg Gln Arg Glu Val
 49 35 40 45
 51 gta gac ctg tat aat gga atg tgt cta caa gga cca gca gga gtt ccc 192
 52 Val Asp Leu Tyr Asn Gly Met Cys Leu Gln Gly Pro Ala Gly Val Pro
 53 50 55 60
 55 ggt cgt gat ggg agc cct ggg gcc aat ggc att cct ggc aca cct ggc 240
 56 Gly Arg Asp Gly Ser Pro Gly Ala Asn Gly Ile Pro Gly Thr Pro Gly
 57 65 70 75 80
 59 atc cca ggt cgg gat gga ttc aaa ggg gaa aag gga gaa tgc tta agg 288
 60 Ile Pro Gly Arg Asp Gly Phe Lys Gly Glu Lys Gly Glu Cys Leu Arg
 61 85 90 95
 63 gaa agc ttt gag gag tcc tgg acc cca aac tat aag cag tgt tcg tgg 336

pp 3,6
**Does Not Comply
 Corrected Diskette Needed**

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:15

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

```

64 Glu Ser Phe Glu Glu Ser Trp Thr Pro Asn Tyr Lys Gln Cys Ser Trp
65          100          105          110
67 agt tgc ctg aac tat ggc ata gat ctt ggg aaa att gcg gag tgt aca 384
68 Ser Ser Leu Asn Tyr Gly Ile Asp Leu Gly Lys Ile Ala Glu Cys Thr
69          115          120          125
71 ttc acg aag atg cgc tcc aac agt gct ctg cga gtt ctg ttc agt ggc 432
72 Phe Thr Lys Met Arg Ser Asn Ser Ala Leu Arg Val Leu Phe Ser Gly
73          130          135          140
75 tca ctt cgg ctc aaa tgc agg aat gca tgc tgt cag cgc tgg tat ttt 480
76 Ser Leu Arg Leu Lys Cys Arg Asn Ala Cys Cys Gln Arg Trp Tyr Phe
77 145          150          155          160
79 aca ttt aat gga gct gaa tgt tca gga cct ctt ccc atc gaa gcc atc 528
80 Thr Phe Asn Gly Ala Glu Cys Ser Gly Pro Leu Pro Ile Glu Ala Ile
81          165          170          175
83 atc tat ctg gac caa gga agc cct gag tta aat tca act att aat att 576
84 Ile Tyr Leu Asp Gln Gly Ser Pro Glu Leu Asn Ser Thr Ile Asn Ile
85          180          185          190
87 cat cgt act tcc tct gtg gaa gga ctc tgt gaa ggg att ggt gct gga 624
88 His Arg Thr Ser Ser Val Glu Gly Leu Cys Glu Gly Ile Gly Ala Gly
89          195          200          205
91 ttg gta gat gtg gcc atc tgg gtt ggc acc tgt tca gat tac ccc aaa 672
92 Leu Val Asp Val Ala Ile Trp Val Gly Thr Cys Ser Asp Tyr Pro Lys
93          210          215          220
95 gga gac gct tct act gga tgg aat tcc gtg tct cgc atc atc att gaa 720
96 Gly Asp Ala Ser Thr Gly Trp Asn Ser Val Ser Arg Ile Ile Ile Glu
97 225          230          235          240
99 gaa cta ccg aaa taa 735
100 Glu Leu Pro Lys
104 <210> SEQ ID NO: 2
105 <211> LENGTH: 244
106 <212> TYPE: PRT
107 <213> ORGANISM: Artificial Sequence
109 <220> FEATURE:
110 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
111 Peptide
113 <400> SEQUENCE: 2
114 Met His Pro Gln Gly Arg Ala Ala Pro Pro Gln Leu Leu Leu Gly Leu
115 1 5 10 15
116 Phe Leu Val Leu Leu Leu Leu Gln Leu Ser Ala Pro Ser Ser Ala Ser
117 20 25 30
118 Glu Asn Pro Lys Val Lys Gln Lys Ala Leu Ile Arg Gln Arg Glu Val
119 35 40 45
120 Val Asp Leu Tyr Asn Gly Met Cys Leu Gln Gly Pro Ala Gly Val Pro
121 50 55 60
122 Gly Arg Asp Gly Ser Pro Gly Ala Asn Gly Ile Pro Gly Thr Pro Gly
123 65 70 75 80
124 Ile Pro Gly Arg Asp Gly Phe Lys Gly Glu Lys Gly Glu Cys Leu Arg
125 85 90 95
126 Glu Ser Phe Glu Glu Ser Trp Thr Pro Asn Tyr Lys Gln Cys Ser Trp

```


RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:15

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

```

127          100          105          110
128 Ser Ser Leu Asn Tyr Gly Ile Asp Leu Gly Lys Ile Ala Glu Cys Thr
129          115          120          125
130 Phe Thr Lys Met Arg Ser Asn Ser Ala Leu Arg Val Leu Phe Ser Gly
131          130          135          140
132 Ser Leu Arg Leu Lys Cys Arg Asn Ala Cys Cys Gln Arg Trp Tyr Phe
133 145          150          155          160
134 Thr Phe Asn Gly Ala Glu Cys Ser Gly Pro Leu Pro Ile Glu Ala Ile
135          165          170          175
136 Ile Tyr Leu Asp Gln Gly Ser Pro Glu Leu Asn Ser Thr Ile Asn Ile
137          180          185          190
138 His Arg Thr Ser Ser Val Glu Gly Leu Cys Glu Gly Ile Gly Ala Gly
139          195          200          205
140 Leu Val Asp Val Ala Ile Trp Val Gly Thr Cys Ser Asp Tyr Pro Lys
141          210          215          220
142 Gly Asp Ala Ser Thr Gly Trp Asn Ser Val Ser Arg Ile Ile Ile Glu
143 225          230          235          240
144 Glu Leu Pro Lys
148 <210> SEQ ID NO: 3
149 <211> LENGTH: 20138
150 <212> TYPE: DNA
151 <213> ORGANISM: Artificial Sequence
153 <220> FEATURE:
154 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
155     Primer
157 <220> FEATURE:
158 <221> NAME/KEY: modified base
159 <222> LOCATION: (265)..(18755) 18855 (p.6)
160 <223> OTHER INFORMATION: N = A, C, G or T/U
162 <400> SEQUENCE: 3
163 gaattcggat ccagacaatg agaaggtaac aatacaaaagc ttcttttggg gaagtccagg 60
164 tactttattc agttgcaaat tagcaaggct caagctcagt ctctggcctc ctagtgggcc 120
165 atcttgctct atttttttct ttgtgaaaaa acacagactg aacccttacc ccagattaga 180
166 accggatctg gaccctttca atcattagtt agtgggtcct tccattttac catggcataa 240
W--> 167 gaattagaag taactggatg ccagnggcaa tccgctgcag actgaccttt aatatcagtt 300
168 tgcaaaaaat ttagaacaaa taaggcaaag gcaagatgtg cctttggtga ctttggggga 360
169 tataactgcc cctgttttgt ctaaaaaggc cagaaactct ctggaagtgg aggctgtgct 420
170 ctaaaattaac ttgctaggta attaagaatt ttagctatct acaatatgaa tctctaatat 480
171 tggactaaat attagaccag tccaagattg aataactggt cacactgaag aaaagagaaa 540
172 aatcattatg actctattaa atgactaatc ttactaagtc agattatagt ctctgatgtt 600
173 cttttgccat aaagttaaaa ggcttgaagc tagtccaaac tagaaaaatg gcaagcaaag 660
174 atgggtctaa aacatgtacc caatttagtt tcctagtcac ttcaatcagg gcactgagtc 720
175 aactcacctg ccagctcatc acacgaatta accatcatgc ttctatagca ttctgtggag 780
176 agaacctatg tttttccctt ccctaataag gtagcagttt aggataaaac cataagccaa 840
177 taagtagatc tttttaagat actataaaagc atttattaaa ttctttgaca tctaaatttc 900
178 aaaattcaaa aataaaaagta tgattttaat agtgtgcacg ggaatgtact aaataatatg 960
179 cacggggata taatttcccc cttctttgtc ttttaagaag ctaaaagttt aaagtttcac 1020
180 aatatctagt ccttagaatt aataacttgt tgacaaaaca tctcaaatac ttgactgtat 1080
181 tcatgtaaca aaggcagtga ctaattgcac tttcaattgt ttttcttaag gagcagttgt 1140

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:15

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

```

182 aactagaaaag cttgaaaagt tattaatagt cacatgtgca taatttattt atttactaga 1200
183 aataagagta tttattttgca gcaattttatt aagtaaagggt cctcaagaat taacactatt 1260
184 atgtggaaac aagtagtaac tgaggacact aagaggaaaag aattatacat gcacaatttt 1320
185 caagaataact aaaatattat cttaaaccat aactgctttg aatatacaaa gaacaagggt 1380
186 atatatcaa tctatcttat atgtacgacc tatagactgc ctgagatata aatttagcat 1440
187 ggcattgttt taagatgtcc aggcaatcta gaacaattta ttaaagtgtc aaaaaccacc 1500
188 ttcttaaaaag gacagcattt tttttctatg agttgtatac gcataagcaa ttgcaaattt 1560
189 gagaattaat agcatctgag ggacgaacaa tcttaagtaa ttgtgagctc tgagatataa 1620
190 cattgactat taatatacaa attaagggtt gattgttcag ctttttaaaa caccatctac 1680
191 agcacacaac tagattatct gtgctgaaac gggggggggg gactcaaaag aataagcatg 1740
192 tgatctaatt cacatgtact tacatctcat atagggttg ttttcaaaca caataattgg 1800
193 gatgtatgca tgtatgaatt tatagaagat acaaaagcat gtataaaaac aatttttaac 1860
194 ttatcttttg gatattgatt gtcaatctat ttaaaatgat ggtatgtcat aggtcaatta 1920
195 ttaatatatt gtaataacca aataaattgc tgtattgaac aaggaacata cacttagtca 1980
196 ggtttgnttt ttgttttttt gcttttttgn tttgttntt ttttttttg gnttttcgag 2040
197 acagggtttc tctatagccc ttggctgtcc tggaaactcac tttgtagacc aggctggcct 2100
198 cgaactcaga aatccacctg cctctgcctc ccgagtgtcg ggatcaaagg cgtgcgccac 2160
199 cacgcccggc tattagtcag gtttttaaga cacaattttt ttttaaaaaa aaaatacacg 2220
200 aatatacatc acaattcttt attagtacca cagtggttcc aataggatgc tgaaactgta 2280
201 ttttgagggtg aaaaccacct caatcttggtc tgccctgcct cggccttcct ctcaggcana 2340
202 agaggctgaa ggcancccaa tctgtttag accanaaaac cntgcccag tcttagtggtg 2400
203 aaaaatatgg aggtcatgg ggcaaagggtg aacgngccc tctcctgagt tcgctgtaaa 2460
204 gccacctgct ccttgccggc ctcttgtag actatagctc tgggaaactg tgtgtctcaa 2520
205 ggcccccccc cacagcagcc agcagctagc tggcttcaca tgggtcaatg atcggtggg 2580
206 aggatgagaa aaatgacttt acaataatgt tttctcttgc caaagaattg ttttgagcac 2640
207 agctaataatc taattaccat tgattgtaat taataacaat tataaaagct ttctttattt 2700
208 tctgtaaagc cttctgtagt aaactaaaac cctaagtaat aaaaagatat tgcctctgag 2760
209 tcttttggtg gagagcaagg atttaaagta aacttctctt gagaggcatt agctaataaa 2820
210 atattttcca cttaggaaac aatatacact gaaagattaa aactcttggtc ttcttgatata 2880
211 gaagcagaaa tgataaaaat ttctcacata atgtagatca atatttagcc atactagagg 2940
212 ctaaatattc cagtngttnc anactcacta gaagcaaaac ctttacaatc attaagangc 3000
213 aaaggagaga gaaaaagaaa caaactttca gatctataat aactatataa aaggtaggca 3060
214 agccagattg taatgccttg ataaattata cagtctgatt gaccctttat aaactctaaa 3120
215 tttgaacttt attaaaacaa catctggcta gatccgtaaa ggtgctcttt tagctaaaag 3180
216 aatatctcct ggtttgcaag acaaaggaaa gtcacacaaa ccgaacagaa gctgctctga 3240
217 gcttagttcc tcttgccatg aggacatata ttagaattac taagtttctt ttgcaccatt 3300
218 aactttggga aagtaaaact ccatttttaa acaatttata actttcggaa tcaacattaa 3360
219 aactttacta atacattgag aaatttggtc tgctgtgcca cgtgcttgag aagactcctg 3420
220 agttgccaat tttaaggcta accttctgtt accaatgtaa caattattta atcttaacca 3480
221 ataacttatg agctgattgt gaaaacacgc agagcacatt accaataaaa aaaatgaagc 3540
222 agttacactt agaccaatca gagaatatta atttttctag ctacaatcat agaataaaag 3600
223 cactttatca tttgccaat acattaataa cgattgcaga gaaccctcca ggaaaaaacc 3660
224 atttatcagc ttttttacc caaaaccaag aggtgcaga ctctctttt tctataaag 3720
225 aacagtttct ccagcagggg ccctcctgag gtgtgctggt ttcctgggtt aagcatgtgg 3780
226 ccactcttg ctttgatgaa ccaccagata aagtttttta gccatcttta ttatccaaca 3840
227 taaaacatag aacattcatt cattctgact ggacacgaac atacatgaat tgaacatgtg 3900
228 aacggattgg tgcacccaaa cacaaaaaca caagagggca gagaacttct gctgtaaggc 3960
229 ccagagagaa caaagcagcg caccctgaa atttctctct gcttctggga cattttctc 4020
230 ccacatgatg cagtttctaa ctgtggccat ccacctgatt attaaatccc ttttattaaa 4080

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:15

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

```

231 ccctttcttt tctcacgcct aaaaaaagca acttcttgga gctgcggcta actgcctgat 4140
232 aaatttcact gctgaaacta agtgaattta gcgcgcaggt ttaacgcagt ttcaacttag 4200
233 cccataccaa ccttctccgg tacgaatttt ctttaattat tttcttcttc catggagctc 4260
234 caaaccagca atgcttcttc caaatgtcct ctgctgtttc ccagtcgccg gttggttcgc 4320
235 caatctgttg aggccagcca gcggcccaca tgtctgggtt ctagcctggg aggtatcttg 4380
236 gaatctggaa gagaagaggg aactaggcgg ctcgagagag aatggaacga taatggaacc 4440
237 aagacatcag tctgatcaag gttcaatttt actatttgga gacactgggt tatgaagtag 4500
238 agggaggggc ccattcctgc caaatcatcc ttggagtcca gtttcagggt accacgtgtt 4560
239 ggctccggaa cagctaggcc gcaggtagca gcagtgggag tgacaggctc caccctgat 4620
240 gctctnttag ccctaacagt caaacctgat cagccagatt tcaggctggg ggggaggtta 4680
241 caatatttgt tggctttttt ttcattgcagc ttttgggggg ggggtgtttt gttttgtttt 4740
242 attgagacag gaatttgctg tgtagccttt attgtcttg aatttgctct gtaaaactagg 4800
243 ctgtccatga actcacagag atctacctgc ctttgccctc ctagtgctgg ggttaaagggt 4860
244 gttcaccacc accacctagc ccataatctc atattctatc aagggattta ggttcataa 4920
245 atgcacttat cataagaggt tccaacagat ggaacacaa tacacagtat aagggtggact 4980
246 aatacatgtg tgtccttggt gaagaatccc ttatcttatg tcctttcatg tgcttgcttt 5040
247 atcaaaacat cctttcacct gtgtctgctt taggataaca ctccttcaca tgtttgccac 5100
248 agcaaagcac catcagacac gactgacttt ccaaagaacc cttaagtttc cacttcagat 5160
249 aggcattctt tccttttagt taagaaaatt ttttctctgt cactctgtgg aaaatatatt 5220
250 ctgtgcattt gacctgtgtt tcttctcctt ccttaattct tattttagat ttggtcactt 5280
251 cacagtgtcc cagatttcct ggatgttttg aaccaggagt tatttttaga ttgaacattt 5340
252 tctttgacct atgtattcat ttcttctacc atgtcttcag tgtctgagat tctctttttt 5400
253 aattcttgaa ttctgttggt gaagcttgcc tctgtggttg ctgttcaa at tcctatatatt 5460
254 tcattttccat atttccctca gtttggggtc tctttattaa ttctgttgga ggaagggggt 5520
255 ccaggagtca cctcacaat cacatattcc caggattgat tgatcaggac caccggccag 5580
256 actcaggagc tgaactgtga tgtagagtca agatcctaca gggcttttaa agcctgagag 5640
257 ctataataac catctctgct aagttactcc accaatcata acttagggat agggctttct 5700
258 gtaggagcat gtctttgttg tgtacttatt ttgctcctat tgggttaggg attcaactat 5760
259 ggcagaggac ttgcctcatc ttatattcat gtcttagctt gcccaaccagg atatcagttt 5820
260 tccacatata tgtctctttc tgtcaagtag gatataaggt tcccaggagg gtcttgga 5880
261 cctaaacttt attctgcccc tactcaaaat ggaagtctta ttctaaatag gtacagggtg 5940
262 ctctcttatg ttgggatcca tcccagggc agcttaaaag gcaaatacta taaaggctga 6000
263 tacacagggt cagaaagtgt tggtttctga gaacatccta gtaacagaag taacagcata 6060
264 tgagaaagtt tccttgatg attaggaaca gcacaaactg gtaggttaga cgggtaacag 6120
265 ttaccaagac cttacaatc ccagttcctc tttcagggtc tgagtggctg tattcctttc 6180
266 cttccattgt ttgtgctttc atagacttct ttaagggatt taatgttttc tttttaagga 6240
267 cctctagcat acacatatag gctgtgttaa ggtctttatg tgtgcttcca ggggtgaata 6300
268 ctcagggcct gctgtgatag ggttggtggg ttctagtggg gacctatcgt cctggctgta 6360
269 attggttggt caggggtagc ctgtaggttc ccaatgagtg tgtgcctgag ctggatgctt 6420
270 gggaaaaaca ttgagtgcg gcaggaaagt ggggggccag ggatctgtat gcttcactga 6480
271 agatgggtgc agaagcagcc tagggctgag actgaggggt tccactctga gaagcagagg 6540
272 gagaggtgaa gatctgcagt tagccacct gcgtccctgc ccagtgtggc ctgtgggttc 6600
273 ccagggagtg ccggctggag ttgggggtgg agggtaggac agggcaatga gtgggggaag 6660
274 ggaatttagg aggggaagat ctgtgggatc caccagcgat gaggtggctg tggtggaagc 6720
275 cgctgcagga gttagcgag agctcaggat gaaactaggg attgggcgtg gaggaatgga 6780
276 gggagcgtgg aggtgcctc tccctctccc tggataggta ggtcacccat ttgcttccc 6840
277 tcagagagtg cctaagagag ttggaggctg ctttctctgt tgaagttgga tagaactttt 6900
278 caaactatat taatctgat tgaaataagc acgtgaaagt gaacctccag cactgaatgt 6960
279 tggctatttt ctaccagcct cagttcacct atgaatggag actccaggct gcatcgctcc 7020

```

from sequence 3

10/534,099

6

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnncagtc 18720
agnctttttt tcaanaagaa agggaaatgg aagctaccaa taggtatgta tttattagag 18780
atacatctag agtctgcttt ttgtttaatt cttcaggaat tcaagacttt aagtaccctc 18840
aaagcttaca gttt⁰acgt tacctagcac gttttcagag agcagcacia aggttaaaca 18900

last "n" in sequence 3

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005
TIME: 12:07:16

Input Set : E:\UTSC772US.APP.txt
Output Set: N:\CRF4\05162005\J534099.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 265,1987,2010,2018,2032,2339,2355,2375,2383,2436,2955,2959
Seq#:3; N Pos. 2962,2998,4626,8255,18422,18460,18464,18484,18495,18508
Seq#:3; N Pos. 18520,18524,18560,18570,18571,18576,18591,18594,18610,18613
Seq#:3; N Pos. 18614,18619,18632,18633,18634,18635,18636,18637,18638,18639
Seq#:3; N Pos. 18640,18641,18642,18643,18644,18645,18646,18647,18648,18649
Seq#:3; N Pos. 18650,18651,18652,18653,18654,18655,18656,18657,18658,18659
Seq#:3; N Pos. 18660,18661,18662,18663,18664,18665,18666,18667,18668,18669
Seq#:3; N Pos. 18670,18671,18672,18673,18674,18675,18676,18677,18678,18679
Seq#:3; N Pos. 18680,18681,18682,18683,18684,18685,18686,18687,18688,18689
Seq#:3; N Pos. 18690,18691,18692,18693,18694,18695,18696,18697,18698,18699
Seq#:3; N Pos. 18700,18701,18702,18703,18704,18705,18706,18707,18708,18709
Seq#:3; N Pos. 18710,18711,18712,18713,18714,18715,18723,18735,18855

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/534,099

DATE: 05/16/2005

TIME: 12:07:16

Input Set : E:\UTSC772US.APP.txt

Output Set: N:\CRF4\05162005\J534099.raw

L:11 M:270 C: Current Application Number differs, Replaced Current Application Number
L:167 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:240
M:341 Repeated in SeqNo=3